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EXAMINER

MINSKEY, JACOB T

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,387	Applicant(s) MAIJALA ET AL.	
	Examiner JACOB T. MINSKEY	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 16-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/19/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-15) in the reply filed on 10/12/2009 is acknowledged.
2. Claims 16-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups II-IV, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1 and its dependent claims 2-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claim 1, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). The Phrase "such as" is utilized in steps b and f.
6. Additionally, step c is unclear because there is not a clear statement on whether the substance and the fiber is mixed prior to introduction to the reactor. For purposes of continued examination, step c will be interpreted to read on mixing the materials either in an unnamed prior mixed step or in the reactor itself.

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7. Regarding claims 1 and 2, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).
8. In the present instance, claim 1 recites the broad recitation short, and the claim also recites <10 s which is the narrower statement of the range/limitation. For purposes of continued examination, the limitation of less than 10 seconds will not be considered.
9. In the present instance, claim 2 recites the broad recitation <10 mm, and the claim also recites <1 mm which is the narrower statement of the range/limitation.
10. Additionally, claim 2 does not state what is "predominantly" <10 mm. It is not stated what this is measuring (length, diameter, etc.).
11. Regarding claim 4, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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12. Regarding claims 6, 8, 9, and 15, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

13. In the present instance, claim 2 recites the broad recitation "several", and the claim also recites both 3-8 and 4-6 rings which is the narrower statement of the range/limitation. The same is said for the speed of the rotors in claim 6.

14. Claim 8 recites a dwell time both of "short" as well as both < 10s and <2 s.

15. Claim 9 recites a gas with both a percentage of >5% and >10%.

16. Claim 15 recites a thickness of 0.1-40% and then both 1-15% and 3-7%.

17. Regarding claim 9, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

19. Claims 1, 3, 9, and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Henricson, WO 02/40773 A1 (already of record).

20. Regarding claim 1, Henricson teaches a method for precipitating mineral particles on fibres to be used for manufacturing paper, paperboard or the like (see page 1 lines 4-15), which method comprises at least the following steps: (a) a fibre material containing the fibres to be used in manufacturing is fed (chute #18, page 8 line 1) into a precipitation reactor (treatment drum, #12, page 8 line 1); (b) a reactive mineral substance, such as calcium hydroxide, is fed into the precipitation reactor (page 1 line 17 and page 10 lines 25-29); (c) the reactive mineral substance and fibre material are mixed to form a fibre suspension in the precipitation reactor and/or before these substances are fed into the precipitation reactor (see pages 1 and 7-8); (d) the fibre suspension in the precipitation reactor is exposed to a substance (Col 2, page 1 line 17 and page 8 lines 10-19) which precipitates at least partially the said reactive mineral substance, in which case at least part of the precipitated mineral substance thus formed precipitates on fibres residing in the fibre suspension (page 1 line 14), (e) the thus treated fibre suspension is led out of the precipitation reactor (page 10 lines 25-29), (f) a gas, which contains a substance precipitating the said reactive mineral substance, such

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as carbon dioxide (page 1 line 17 and page 8 lines 10-19), is fed into the precipitation reactor, for forming a gas space containing the said precipitant in the precipitation reactor (page 1 line 17 and page 8 lines 10-19), and (g) the fibre suspension that has been fed and/or that is formed in the precipitation reactor is disintegrated as small solid particles or liquid drops and/or particles into the said gas space (see pages 7 and 8), characterized in that the fibre material is activated in an activation zone before the precipitation and/or during the precipitation so that the ability of the fibres to bind with each other and to bind precipitated mineral substance increases (this limitation is read on by the rotating of the drum with the multiple zones and inherent effects it has on the fibers, see pages 8-10), and that the dwell-time of the fibre material in the activation zone is short (mixing for as little as 3 minutes, claim 8).

21. Regarding claim 3, Henricson teaches that forces are targeted at the fibre suspension in an activation zone (intermediate walls in the drum making multiple treatment zones, page 9 lines 16-21), located in front of the precipitation reactor or at the beginning of the precipitation reactor with regard to fibre suspension flow (see figures 1a and 1b), said forces activating the fibres so that the ability of the fibres to bind with each other, and to bind precipitating and/or precipitated mineral substance, increases (this is inherently taught by the mixing process described on pages 1 and 8-10).

22. Page 9 lines 1-7 of Henricson expressly teach that as the pulp is mixed, the fibers fall through the gas space and form droplets while in connection with the gas. Henricson teaches that the droplets are formed directly on the fiber by the arrangement

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of mixing apparatus inside the drum (page 9 lines 5-7). This reads on the limitation of increasing the binding and precipitation of substances together.

23. Regarding claim 9, Henricson further teaches that gas containing >5%, typically >10%, of precipitant, such as carbon dioxide, is fed into the precipitation reactor (10-25%, page 11 line 13).

24. Regarding claim 12, Henricson further teaches that the reactive mineral substance consists of calcium hydroxide (page 1 line 17), calcium sulphate, calcium oxide or other reactive mineral substance and/or their mixture, which is suitable to be precipitated with a precipitant (see pages 1 and 8), and the reactive mineral substance is selected so that the product to be manufactured from fibres is brought the desired characteristics (see pages 1 and 2).

25. Regarding claim 13, Henricson further teaches that the fibre material comprises virgin fibre obtained from chemical, mechanical, chemi-mechanical, thermo-mechanical or corresponding process; de-inked or inked recycled fibre obtained from newsprint, kraft paper, soft paper, special paper or paper board, or fibre obtained from broken or other corresponding fibre, bleached or unbleached fibre, refined or unrefined fibre, dried or undried fibre, or any mixture of any of these (pages 1 lines 4-15 and 26-33).

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Claim Rejections - 35 USC § 102/103

26. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

29. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

30. Claims 2, 4, 10, and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Henricson, WO 02/40773 A1 (already of record).

31. Regarding claim 2, Henricson teaches that the fiber suspension is feed through a gas space inside the drum in which droplets are formed on the fibers (page 9 lines 1-7), but does not provide a numerical value for the droplets. It is the Examiner's stance that the "droplets" of Henricson read on the "small liquid drops" of the claimed application. In the alternative, one of ordinary skill in the art at the time of the invention would have found it obvious that the droplets of Henricson would have been smaller than 10 mm in some dimensional measurement (see 112 rejection above).

32. Regarding claim 4, Henricson further teaches that the rotating drums are used to mix the pulp in different mixing zones as well as with internal walls that can be used in the mixing of the materials (page 9 lines 9-33 and page 11). It is the Examiner's stance that this teaching directly reads on the limitations of: forces such as recurrent impacts, double impacts, shear forces, turbulence, over- and underpressure pulses or other corresponding forces are directed into the fibre suspension, whereby the fibres are mechanically activated, especially their surfaces, by fibrillating or refining the fibres and opening their lumens for mineral substances, for example, and/or the fibre surfaces are chemically activated, for example, forming active OH--groups on the fibre surfaces.

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33. In the alternative one of ordinary skill at the time of the invention was made would have found it obvious that the mixing stages of Henricson would or advantageously could include high mechanical activation such as refining, shear forces, or fibrillating as part of the mixing steps as described by Henricson to further condition the pulp and thoroughly mix in the materials of the final product.

34. Regarding claim 10, Henricson further teaches that the gas containing the precipitant is pure or nearly pure carbon dioxide (100% carbon dioxide, page 11 line 11), combustion gas or other carbon dioxide-containing gas, or any gas suitable for precipitating the used reactive mineral substance, or is a mixture of these gases.

35. Henricson further teaches that the drum does not require the use of additionally accessories such as gas compressors (page 11 line 20). It is the Examiner's stance that this teaching reads on the limitation that gas containing the precipitant is fed into the precipitation reactor so that overpressure is maintained in the precipitation reactor. In the alternative, it would have been obvious to one of ordinary skill in the art at the time of the invention to control the pressure inside the reaction vessel for the safety of the workers as well as to gain control of the operational conditions.

36. Regarding claim 14, Henricson further teaches that the fibre material contains fibres, in addition to fine matter such as fibre based fine matter, impurities and/or mineral substances (the pulps utilized by Henricson, see page 1, would inherently include these "fiber based fine matter" based off of the nature of the pulp and pulping process). In the alternative, it would have been obvious to one of ordinary skill in the art

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at the time of the invention that there would be small amounts of fine matter (such as fibrils, dirt, husk, shell, and other particulates) and impurities in the pulp.

Claim Rejections - 35 USC § 103

37. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

38. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

39. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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40. Claims 5-8, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henricson, WO 02/40773 A1 (already of record) in view of Palm et al, WO 03/031717 A1.

41. Henricson remains as applied above. Palm teaches a method and apparatus that includes mixing pulp with additives and gas in a multi ring apparatus to mix the pulp with the gas and additives to produce a pulp with a desired composition and with desired physical/chemical attributes [0006-008 and Figures 1 and 2]. While Palm is focused on removing impurities and dyes from the starting pulp material, Palm also teaches that the additives can improve desired attributes of the pulp in addition to taking impurities away [0022-0025]. One of ordinary skill in the art would have been able to combine the teachings of Palm and Henricson for the benefit of utilizing an multi ringed apparatus (as taught by Palm) as an alternative to the multi component apparatus as taught by Henricson, for the benefit of quickly processing the pulp to gain the desired characteristics of to make the final product.

42. Regarding claims 5 and 6, Henricson teaches using partitions to aide the mixing of the pulp that divides the area into multiple components, but does not provide the speed in m/s only in basic rpms.

43. In the same field of endeavor of mixing gas into pulp for treatment, Palm teaches that the multi component apparatus rotates the rings in opposite directions (see figure 2) at a "high speed" of 160 1/s [0019]. Although this is not the same measure of units as m/s, it would have been obvious to one of ordinary skill in the art at the time of the

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invention that this high speed rotation would read on the high speed rotation limitations of the current claims.

44. Regarding claim 7, Henricson further teaches that the gas is inserted in the reactor, containing a substance precipitating the mineral substance, is fed to the precipitation reactor through the activation zone, in which case the fibres activated in this activation zone come into contact with the said precipitant immediately during activation or right after it (this limitations is read on by the rotating of the drum with the multiple zones and inherent affects it has on the fibers, see pages 8-10 and figures).

45. Regarding claim 8, Palm further teaches that the dwell-time of the fibre suspension containing the fibre material and the reactive mineral substance in the activation zone is typically <2 s, more typically <1 s(at most 2 seconds [0025]).

46. Regarding claim 11, both Henricson and Palm teach that the pulp is forced through multiple sections or rings and that the consistency of the gas is affected at different portions of the reactor (Henricson pages 9-11 and Palm [0022-0025]). Both Palm and Henricson teach that the multiple reactions zones take place inside the same apparatus (see figures 1 and 2 of Palm). It is the Examiner's stance that the multiple rings and zones can read on the limitation of two or more reactors, and thus Palm reads on the currently presented limitations. In the alternative, it has been held that a mere duplication of working parts of a device involves only routine skill in the art (In re Harza, 274 F.2d 669, 124 USPQ 378).

47. Regarding claim 15, it is unclear to the Examiner how the pulp can be fed at a thickness of 0.1-40% into the reactor. For continued examination the Examiner is

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assuming this is requiring that the concentration of the pulp is 0.1-40%, which is taught by Palm at 8% [0018] and by Henricson (4% [0017]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB T. MINSKEY whose telephone number is (571)270-7003. The examiner can normally be reached on Monday to Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JTM

/Eric Hug/
Primary Examiner, Art Unit 1791

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